up heat to the stationary surface. For some reason or other there seems to be an impression that the higher the velocity of flow the better. Undoubtedly there is a certain velocity of flow that will result in the maximum heat transfer per unit of heating surface, and in the case of properly designed heat transfer elements, be they regenerators, recuperators, steam boilers, etc., it is extremely probable that the natural convection currents will

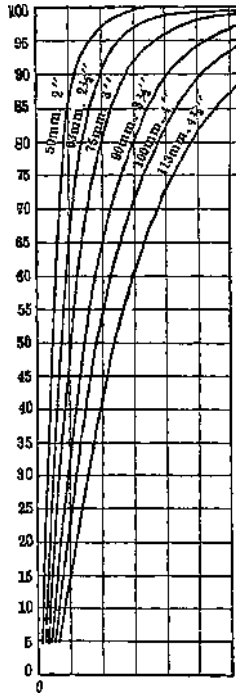

FIG. 153.

Density...$p = 1.81$
Specific heat, c=0.250
Conductivity in cal/sec/cm^2/! °cm = 0.0036 7
Diffusivity.. h^* =0.00811

Rise in Temperature on the Median Line of Fireclay Brick in Per-centage of Surface Temperature. Both faces exposed to heat. Ordinates, percentages; abscissae time in min-utes.

assume this velocity

themselves. Higher velocities, as well as lower velocities, will reduce the rate of heat transfer. The higher velocities may be obtained by forcing the gas or liquid past the surface, when the velocity is too low, that is, when the heated gases are not carried away from the chamber above the regenerator, or the cooled gases cannot flow away from below the checkerwork, recirculation will take place in the form of convection eddy currents.